

REMARKS

Claims 27 and 30 are canceled without prejudice or disclaimer. The claims have been amended to recite a method for producing cheese. Support for this amendment is found in original claim 27, and throughout the specification as originally filed, including in Example 2. Accordingly, claims 1-26, 28-29 and 31 are therefore pending.

It is respectfully submitted that the present amendment presents no new issues or new matter and places this case in condition for allowance. Reconsideration of the application in view of the above amendments and the following remarks is requested.

I. Rejection of Claims 1, 2, 4, 11, 16, 17, 19 and 31 under 35 U.S.C. 102(b)

Claims 1, 2, 4, 11, 16, 17, 19 and 31 stand rejected under 35 U.S.C. 102(b) as allegedly anticipated by Iwana et al., "Fresh cream emulsion having acid resistance and heat resistance and its production," JP 07079699 (1996) (abstract). The Examiner contends that Iwana et al. teach an emulsion prepared by homogenizing cream, a whey protein hydrolysate and an emulsifying agent.

As amended, the claims are directed to a method for producing cheese. Applicants respectfully submit that the present claims are not anticipated by Iwana et al. Applicants respectfully request reconsideration and withdrawal of the rejection.

II. Rejection of Claims 1-3, 11-13, 16-18 and 31 under 35 U.S.C. 102(b)

Claims 1-3, 11-13, 16-18 and 31 stand rejected under 35 U.S.C. 102(b) as allegedly anticipated by Kaustinen et al., "Acceptance of cream liqueurs made with whey protein concentrate," Journal of Dairy Science (1987) (abstract). The Examiner contends that Kaustinen et al. teach a homogenized dairy product comprising cream and a whey protein concentrate.

As amended, the claims recite a method for producing cheese. Applicants respectfully submit that the present claims are not anticipated by Kaustinen et al. Applicants respectfully request reconsideration and withdrawal of the rejection.

III. Rejection of Claims 1-31 under 35 U.S.C. 103(a)

Claims 1-31 stand rejected under 35 U.S.C. 103(a) as obvious over Iwana et al. and Kaustinen et al. in view of Applicant's disclosure. Iwana et al. and Kaustinen et al. are cited as described above. The Examiner states that the claims differ as to the specific amounts and conditions for hydrolysis. The Examiner contends that in the absence of a showing that the

contrary, the amounts and hydrolysis limitations are seen as a matter of choice well within the skill of the artisan.

The presently claimed invention is directed to a process for producing cheeses, and in particular, a process for enhancing the incorporation of whey proteins into cheese by subjecting a mixture of (i) cream and (ii) a whey protein preparation to a homogenization process, and incorporating the homogenized mixture into cheese in a cheese-making process. The present invention offers improvements over prior art cheese-making processes, wherein whey protein is generally lost during the cheese-making process (i.e., drained off from the cheese curd). The present invention also offers improvements over methods for enhancing whey protein content in cheese-products by concentration of milk by ultrafiltration or by heat denaturation of milk or whey, which result in cheese-products exhibiting reduced stretch and meltability and reduced ripening characteristics. See the Specification at page 1, lines 16-24, and Example 2.

Neither of the cited references, alone or in combination, suggest a method for enhancing the whey protein content in cheese. Iwana et al. discloses a process for preparing an acid and heat-resistant cream emulsion for use in a canned coffee drinks. Kaustinen et al. discloses a process for preparing cream liqueurs. Neither Iwana et al.'s process for making a dairy additive for coffee drinks nor Kaustinen et al.'s process for making cream liqueurs, however, suggest to a skilled artisan that an improved cheese product having an enhanced whey protein content can be obtained by subjecting a mixture of (i) cream and (ii) a whey protein preparation to a homogenization process, and incorporating the homogenized mixture into cheese in a cheese-making process. See, e.g., the specification at Example 2.


Applicant therefore respectfully submits that the claimed invention is not obvious over Iwana et al. and Kaustinen et al. Reconsideration and withdrawal of the rejection under 35 U.S.C. 103(a) is therefore respectfully requested.

IV. Conclusion

In view of the above, it is respectfully submitted that all claims are in condition for allowance. Early action to that end is respectfully requested. The Examiner is hereby invited to contact the undersigned by telephone if there are any questions concerning this amendment or application.

Respectfully submitted,

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Pemell

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Group Art Unit: 1652

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Examiner: Wong, L

For: Whey Protein Emulsion

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Commissioner for Patents
Washington, DC 20231

Sir:

The following amendments have been made to the above-identified application:

IN THE CLAIMS:

1. (Amended.) A method for producing [a dairy product additive] cheese, said method comprising
 - a) subjecting a mixture of (i) cream and (ii) a whey protein preparation to a homogenization process;
 - b) mixing said homogenized mixture from said a) with a milk to provide a cheese milk; and
 - c) producing cheese from said cheese milk.
2. (Unchanged.) A method as defined in claim 1, wherein said homogenization process comprises emulsification.
3. (Unchanged.) A method as defined in claim 1, wherein said whey protein preparation is selected from the group consisting of whey protein isolate and whey protein concentrate.
4. (Unchanged.) A method as defined in claim 1, wherein said whey protein preparation comprises hydrolyzed whey proteins.
5. (Unchanged.) A method as defined in claim 4, wherein said whey protein preparation exhibits a degree of hydrolysis (DH) of between about 0.5% and about 20%.

6. (Unchanged.) A method as defined in claim 5, wherein said whey protein preparation exhibits a degree of hydrolysis (DH) of between about 1% and about 10%.

7. (Unchanged.) A method as defined in claim 6, wherein said whey protein preparation exhibits a degree of hydrolysis (DH) of between about 2% and about 8%.

8. (Unchanged.) A method as defined in claim 4, wherein said hydrolyzed whey proteins are prepared by contacting whey proteins with a glu/asp-specific protease.

9. (Unchanged.) A method as defined in claim 1, wherein the mixture is contacted with a protease prior to said homogenization step.

10. (Unchanged.) A method as defined in claim 9, further comprising inactivating said protease prior to said homogenization step.

11. (Amended.) A [dairy product additive] ~~cheese product~~ produced using a method as defined in claim 1.

12. (Amended.) [A dairy product additive as defined in claim 11] ~~The method as defined in claim 1,~~ wherein said [additive] ~~homogenized mixture~~ comprises a whey protein:fat ratio of at least about 2% by weight.

13. (Amended.) [A dairy product additive as defined in claim 11.] ~~The method as defined in claim 1,~~ wherein said [additive] ~~homogenized mixture~~ comprises a whey protein:fat ratio of at least about 4% by weight.

14. (Amended.) [A dairy product additive as defined in claim 11.] ~~The method as defined in claim 1,~~ wherein said [additive] ~~homogenized mixture~~ comprises a whey protein:fat ratio of at least about 8% by weight.

15. (Amended.) [A dairy product additive as defined in claim 11.] ~~The method as defined in claim 1,~~ wherein said [additive] ~~homogenized mixture~~ comprises a whey protein:fat ratio of at least about 12% by weight.

16. (Amended.) A method for producing [a dairy product] cheese, said method comprising:
- (i) providing a mixture comprising (a) cream and (b) a whey protein preparation;
 - (ii) subjecting the mixture to a homogenization process; and
 - (iii) incorporating the homogenized mixture produced in (ii) into [a dairy product] cheese.
17. (Unchanged.) A method as defined in claim 16, wherein said homogenization process comprises emulsification.
18. (Unchanged.) A method as defined in claim 16, wherein said whey protein preparation is selected from the group consisting of whey protein isolate and whey protein concentrate.
19. (Unchanged.) A method as defined in claim 16, wherein said whey protein preparation comprises hydrolyzed whey proteins.
20. (Unchanged.) A method as defined in claim 19, wherein said hydrolyzed whey proteins are prepared by contacting whey proteins with a glu/asp-specific protease.
21. (Amended.) A method as defined in claim 16, wherein the mixture of step (i) contributes more than about 5% of the total fat in the [dairy product] cheese.
22. (Amended.) A method as defined in claim 21, wherein the mixture of step (i) contributes more than about 20% of the total fat in the [dairy product] cheese.
23. (Amended.) A method as defined in claim 22, wherein the mixture of step (i) contributes more than about 40% of the total fat in the [dairy product] cheese.
24. (Unchanged.) A method as defined in claim 16, wherein the mixture of step (i) is contacted with a protease prior to step (ii).
25. (Unchanged.) A method as defined in claim 25, wherein the protease is inactivated prior to step (ii) or step (iii).

26. (Unchanged.) A method as defined in claim 16, wherein the mixture of step (I) further comprises a phospholipase.

28. (Amended.) A method as defined in [claim 27] ~~claim 16~~, wherein said cheese is selected from the group consisting of ripened and unripened cheese.

29. (Unchanged.) A method as defined in claim 28, wherein said ripened cheese is cheddar and said unripened cheese is mozzarella or cream cheese.

31. (Amended.) A [dairy product] ~~cheese product~~ produced by a method as defined in claim 16.